GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST-OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, JULY 14, 1897.

TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLE:—One Way to Reduce the Cost of Park Maintenance..... 271
Second-growth White Pine in Pennsylvania.....*A. K. Mlodzianshy.* 272
Roots in Commerce—II.. ... .*M. B. C.* 273
The Cañon Winds in Utah.....*F. C Sears.* 274
The Care of Weak Limbs of Trees. (With figure.).....*J. G. Jack.* 274
PLANT NOTES..... 276
CULTURAL DEPARTMENT:—Transplanting Pæonies.....*The London Garden.* 276
Notes from Baden-Baden .....*Max Leichtlin.* 277
Garden Notes.....*W. E. Endicott.* 277
Opuntias and Sedums, Coronilla varia, Centaurea macrocephala, *Joseph Meehan.* 277
CORRESPONDENCE:—Notes from West Virginia..... *Danske Dandridge.* 277
Dodder in Clover.....*Professor Byron D. Halsted.* 278
Pear Blight.....*G. F.* 278
Two Insect Pests..... ....*S. de L. Van Rensselaer Strong.* 278
Gardens for Public Schools.....*Henry L. Clapp.* 278
CURRENT LITERATURE..... 279
RECENT PUBLICATIONS..... 279
NOTES..... 280
ILLUSTRATION:—The right and the wrong way to support a weak branch, Fig. 35. 275

One Way to Reduce the Cost of Park Maintenance.

THERE are few public parks in this country in which the trained eye does not generally detect a disheveled or untidy look. The shrubberies are disfigured by dead wood; strong, coarse-growing bushes are smothering the more delicate ones; trees are defoliated by insects and fungi, and many of them are making a sickly growth; the road borders are ragged and the general effect is a weak imitation of untamed nature. The hand of man is visible everywhere, but his efforts are too feeble to be the controlling force, and they rather mar than make the landscape. If this fact is pointed out to park superintendents or park commissioners they at once reply that in the first place they cannot secure enough money to do the work as it is done in the most carefully managed private grounds, while, in the second place, if they had all the money the work demands it would be impossible to secure enough skilled labor and intelligent superintendence to do it in the most approved way. And there is much to justify this excuse—that is, parks do languish for lack of maintenance, and adequate maintenance is impracticable for lack of funds and trained workmen.

Under such conditions the parks must suffer, of course, but it is singular that some commissioner, instead of struggling after appropriations which, under the growing expenses of modern cities, are much harder to secure every year, does not argue in favor of designing and constructing parks in such a way that they can be cared for more cheaply. We are speaking now of large rural parks where quiet landscapes are the essential features. To provide such landscapes we need good grass, good trees, an abundance of hardy shrubs effectively arranged, with good roads and walks to make the pleasant prospects available. Little else is necessary, from an artistic point of view, for the more simple the material the more effective and enduring will be the picture which an artist of real creative faculty will produce. To insure cheap maintenance it is essential that all work should, in the first place, be done thoroughly and well. The roads should be perfectly drained and constructed of the best material, and there should not be too many of them. Equally or even more important is it to have a deep, rich, well-drained soil, for turf on such a soil lasts longer and is more easily kept free from weeds, while the trees and shrubs planted in it will also be long-lived and their branches will not be dying back every year as they do on trees and shrubs which lead a starved life on thin, sterile soil. Of course, the hardiest trees and shrubs should be selected, for there is no economy in planting trees or shrubs which are liable to be killed every year or so, partially if not entirely, by frost or heat, or drought or winds, or some other freak of American weather which annually works ruin upon a large percentage of our exotic garden plants. Nor should we select plants like garden Roses, which, unless carefully watched, are disfigured every year by insects. It costs time and labor to cut out dead or dying branches, to remove dead trees and fight insects.

But the shrubs and trees which need the least attention are not only the most economical ones to plant; they are the best from an artistic point of view. The fact is, that for producing large effects, for making scenes which a painter would like to transfer to canvas, we do not need any great variety. With wood borders of our native American trees, a dozen good shrubs, half as many climbers and green turf, a good landscape-gardener can produce scenery which is more truly restful to nerves overstrained by city life than any more elaborate planting scheme could make. In fact, it is quite impossible to take all the showy trees and shrubs which are available in this climate and group them together so that they will have any consistency or unity of design. A landscape-painter would make himself ridiculous if he argued that his picture was valuable in proportion to the number of different colors which he could manage to work into his canvas, and certainly the landscape-gardener who tries to use all known shrubs and trees of diverse form and habit, and with flowers and leaves of every color, is more likely to create a landscape which resembles a crazy quilt than one which suggests a picture of peace. Some of the noblest pleasure-grounds in the world contain nothing but big trees and grass; and how superior simplicity of this sort is to the fussiness of modern decorative gardening will be appreciated by any one who compares St. James Park, in London, with Battersea, on the other side of the Thames.

The tendency among superintendents of planting in parks is constantly toward showy plants, and particularly exotic ones, and if they are rather rare so much the better. They seem to feel that the way to establish a reputation is to produce something that will excite surprise and which will strike the beholder as remarkable, and, no doubt, the shrubs and trees which can show the gayest flowers will be more likely to arrest popular attention, and therefore these plants are very largely selected. Now, a very elaborate and varied planting scheme may be admissible on private grounds of limited extent, although on a large place a true artist will exercise restraint in this particular. But when a man can afford to plant a collection of rarities he can probably afford to maintain them. If any of them are unable to take care of themselves he pays for the labor and other expenses which are required to give them special protection. He sprays them against attacks of fungous diseases and defends them against the assaults of destructive insects; when they die back in winter, his gardeners cut the dead wood away and he gives them all the pruning and training that is necessary to keep them looking trim and happy. Public grounds, however, should be considered from an entirely different point of view. Shrubs with gaudy flowers are out of place where children, old or young, will be tempted to break off their branches. Shrubs and trees which need constant pruning to keep them from looking shabby should be rejected. Elaboration in planting ought to be forbidden as utterly as needless construction. The very qualities which would make a particular shrub or tree tempting to a man who is searching for a showy specimen to decorate the border of his small lawn are the very ones which ought to condemn it for use

in a park where the general effect is the first thing aimed at and where economy in maintenance is a necessity.

The sum of the matter is that one good way to reduce the cost of maintaining rural parks is to make them less pretentious and artificial in design and to construct them in the outset in the most thorough manner. This will not only save money, but it will lessen the danger of sins against good taste. At least, it will tend to encourage that simplicity which is the foundation quality of all sincere art.

Second-growth White Pine in Pennsylvania.

THE valley along Hickory Creek and its tributaries—Beaver, Otter and Queen Creeks—the slopes and the tops of the hills which surround it, extending to the banks of Tionesta Creek, are in places abundantly covered with thrifty young White Pines. The second-growth White Pine here is of particular value; it affords an opportunity to study the process of natural regeneration of White Pine and its progressive development under conditions almost like those which would generally take place in the pineries, should the cuttings be regulated so as to assure the complete reproduction of the Pine. While the White Pine in Pennsylvania reproduces itself readily everywhere—in the openings of the forest, on the cut-over lands and on the abandoned fields—still the areas of second-growth White Pine are usually small, and the park-like aspect of the young growth does not allow us to draw conclusions as to what an area completely restocked would look like, and as to what the progressive development of a second-growth White Pine would be under forest conditions. The unsatisfactory state of reproduction of White Pine is due mainly to the lack of a sufficient quantity of good seeds The only seeding trees to be found on the cut-over lands are the few defective Pines left, which provide undesirable seeds with a very low percentage of germination. Then also the inferior hardwoods, always spared by the axe, cover the ground with a thick young growth which hinders considerably the germination and development of the few Pine seeds accidentally brought by wind. The successful and complete regeneration of the Pine at Hickory Valley finds its explanation in the fact that the areas now grown up with young Pine, when stripped over forty years ago of their original growth, were surrounded by forest, and thus abundantly provided with seeds from the adjoining walls of standing White Pine.

An acre representing typical conditions of regeneration in the valley was staked off on a steep slope facing the south-west. The young Pine on the acre was mixed with hardwoods and scattering Hemlock. The dense undergrowth consisted of 160 Beech-trees, 108 Maples, 12 Oaks, 9 Ashes, 76 Black Birches, 189 Yellow Birches, 100 Ironwoods, 2 Black Cherry trees, 2 Hickories and 248 Hemlocks, all of which were very small, less than three inches in diameter and from five to ten feet high. The soil, being here uniform, was a clayey loam intermixed with shale, yellowish brown in color, deep, fresh, drained on the south by Beaver and on the west by Hickory Creek, with three or four inches of mold on top and a surface cover of abundant leaves and a few Ferns. The subsoil was a laminated shale of an indefinite depth. The age of the Pines ranged from forty-two to forty-eight years. The canopy formed by the Pine in places represented a full cover, but the average density of crown cover on the acre was 0.8. Of the 753 trees on the acre there were 383 White Pines, 50 Beeches, 46 Maples, 20 Oaks, 16 Ashes, 73 Black Birches, 59 Yellow Birches, 13 Ironwoods, 15 Black Cherries and a few Aspens and Butternuts not counted.

The following are the dimensions of the White Pine: One tree was fifteen inches in diameter, breast-high; one, fourteen inches; one, thirteen inches; four were twelve inches; twelve, eleven inches; twenty-one, ten inches; twenty-eight, nine inches; twenty-four, eight inches; twenty-three, seven inches; thirty-four, six inches; forty-nine, five inches; forty-one, four inches; fifty-six, three inches, and eighty-eight were under three inches in diameter. The number of Pines over three inches in diameter is thus 295, while only 149 were more than six inches in diameter.

The dimensions of the species intermixed are as follows: Seven Hemlocks, at breast-high, ranged from six inches to twenty-four inches in diameter, and seventy-one from three to six inches. Two Beeches ranged from six to fourteen inches, and forty-eight from three to six inches. Two Maples ranged from six to ten inches, and forty-four from three to six inches. Seven Oaks ranged from six to ten inches, and thirteen from three to six inches. Four Ashes ranged from six to ten inches, and twelve from three to six inches. Seventy-three Black Birches ranged from three to six inches; two Yellow Birches from six to ten inches, and fifty-seven from three to six inches. One Ironwood ranged from ten to fourteen inches, and twelve from three to six inches. Five Black Cherries ranged from six to ten inches, and ten from three to six inches.

From these measurements it is seen that while the number of White Pines over three inches in diameter constitutes only forty-four per cent. of the total number of trees on the acre, the number of White Pines over six inches in diameter, when compared with that of all the other species on the acre above that dimension, swells to the dominating per cent. of eighty-three. It is not astonishing, then, that the reproduced areas at Hickory Valley carry with them an impression of being stocked exclusively with White Pines. The close examination of the above tables throws a good deal of light upon the nature and process of regeneration of White Pine. The total number of trees on the acre, including the undergrowth, is 1,723; the number of White Pines is only 383. The Pines then have started and grown among the hardwoods, which, being large in number, did not, however, interfere either with the reproductive power or the thriftiness of the Pines. The hardwoods were gradually crowded out, and in the long and natural struggle for light and room succeeded only so far as to retain twenty-three individuals of considerable size, leaving all the others, together with the Hemlock, far below the canopy formed by vigorous Pines. This clearly shows that, with the provision of a sufficient quantity of Pine-seeds, the hardwoods need not interfere with the successful reproduction of White Pine, unless it be old and dense timber which shades the ground and young growth unduly. On the contrary, the hardwoods, instead of being undesirable weeds, may render to the success of regeneration of White Pine manifold and valuable services. First of all, the hardwoods on the ground prevent it from growing up into weeds, which are far more dangerous to the starting Pines than the hardwoods. In the seedling stage the Pines are protected by the hardwoods from frost, which, when occurring at the beginning either of spring or fall, is liable to kill the terminal branches of the Pines. When the Pines reach a similar height with the hardwoods, the latter become stimulants for the height-growth of the Pines. When the Pines have lifted their boles above those of the hardwoods, the latter assume the role of undergrowth, protecting on one hand the ground from the direct rays of the sun, and on the other providing ample shade for the shafts of the Pines, and thus clearing them of limbs. The accumulating leaves of the hardwoods shed annually form a rich litter, a natural forest-manure, which improves the physical conditions of the soil, thus indirectly benefiting the growth of the Pines. Then the larger number of trees to the acre usually found in mixed forests affords ample protection from wind. Adding to all this, that the spread of diseases caused either by fungi or insects is naturally prevented in mixed forests, the value of the hardwoods with regard to the regeneration of White Pine and its development may be better understood.

The thrifty appearance of the White Pines at the valley, the straightness and clearness of their shafts and the proportionally developed crowns prove that the Pines here

were considerably benefited in their growth by the presence of the hardwoods.

For the information of the Division of Forestry twenty-seven individual Pines from this locality were measured and completely analyzed. The table given below illustrates the progressive development of the dominant young White Pines at Hickory valley:

TABLE SHOWING THE RATE OF GROWTH OF DOMINANT YOUNG WHITE PINES AT HICKORY VALLEY, PENNSYLVANIA.

Age.	Diameter, breast-high, without bark.	Height of tree.	Volume without bark.	Periodical accretion.				Average annual accretion.	Current annual accretion.
				Decade.	Height.	Diameter.	Volume.		
	Inches.	Feet.	Cu. ft.		Feet.	Inches.	Cu. ft.	Cu. ft.	Cu. ft.
10	3.4	9	0.3	1	9	3.4	0.3	0.03	0.03
20	7.2	26	3.3	2	17	3.8	3.0	0.16	0.30
30	9.5	42	9.2	3	16	2.3	5.9	0.31	0.59
40	12.2	54	19.7	4	12	2.7	10.5	0.49	1.05

The height of the Pines on the sample acre was from fifty-five to sixty-five feet, with a volume of stems varying from sixteen to thirty cubic feet. The yield of the acre for the Pine only, not considering the 144 Pines under four inches in diameter, was 1,824 cubic feet, which means an average annual accretion of forty cubic feet. The current annual accretion during the last ten years was 110 feet. It will certainly increase up to eighty years, but assuming that, contrary to biological laws, the current accretion will remain the same up to one hundred years, the yield of the acre for that age will be at least 8,000 cubic feet. Making an allowance of fifty per cent. or sixty per cent. of waste when passing through the mill, the 8,000 cubic feet will furnish from forty to fifty thousand feet, board measure. A sum of from $200 to $250 net could then be realized after the lapse of fifty-five years.* A calculation with four per cent. compound interest establishes the present value of the acre at from $23.00 to $29.00 when kept under forest growth. For agricultural purposes it is not worth anything, because the steep slopes of the hills from 400 to 500 feet above any roadway are absolutely unfit for cultivation.

Washington, D. C. *A. K. Mlodziansky.*

Roots in Commerce.—II.

THE Butterfly-weed, Asclepias tuberosa, of our roadsides and dry pastures, with its well-known deep orange-colored flowers, is represented in trade by its root, which is known as Pleurisy-root. Growing throughout the United States, this plant is particularly abundant in the south, where the fleshy, irregular, often spindle-shaped roots are esteemed as a remedy for flatulence and indigestion as well as for pleurisy and affection of the lungs. This Milkweed differs from other species of Asclepias in not giving out a milky juice when cut or bruised. Another root of the Milkweed family in commerce is Indian Hemp, Apocynum cannabinum, used as an emetic and cathartic. The small shrub Spiræa Ulmaria affords the root which appears in the lists as Queen of the Meadow, and is known also as Meadow-sweet or Meadowwort. This part of the plant is considered less valuable, however, than the leaves and bark. Pellitory, the root of the composite plant, Anacylus Pyrethrum, brought from the Mediterranean regions of Africa and Europe, is especially useful in dentistry as a powerful irritant and sialogogue. At one time Arrowroot, Maranta arundinacea, was successfully grown in Georgia and Florida, but the supplies for this country now come almost entirely from Bermuda by way of England, and from St. Vincent, one of the British West India islands. It is also cultivated in other of the West Indies, and in the East Indies and Africa. Arrowroot from the Bermudas has the highest reputation, and its cultivation and manufacture are carried on in primitive fashion by the small farmers in St. David's and other remote islands of the group. This nutritious starch, which is now used almost entirely as a delicate food for sick persons, is said to owe its name to Indians, who used it for neutralizing the venom from poisoned arrows.

Marshmallow-root, Althea officinalis, is at home in the temperate parts of northern and western Asia and the greater part of Europe, and has been naturalized in the salt marshes along the coast of New England and New York. The roots are collected in spring or autumn when two or three years old, the outer skin being removed in their preparation for market. They are sometimes used to give proper consistence to pills, as a demulcent and a poultice, and are credited with nutritious qualities. The blackish knotted rhizomes of Helleborus niger, with their many long brownish fibres, come from the mountains of southern Europe. The plant has an assured place in gardens for the late flowers known as Christmas roses. The ancients ascribed great power to Hellebore and used it for relief from such desperate diseases as epilepsy, some forms of mania, dropsy and scrofula, while its use is now comparatively restricted.

One of the most important exports from Mexico is jalap, the tubers of Ipomœa purga, and it also comes from Brazil. It consists of resin and starch almost entirely.

The rhizomes of Male Fern-root, Aspidium Felix-mas, and our native A. marginale are gathered in summer before they are a year old, since they soon lose their anthelmintic properties. Like many modern remedies this was also a medicine of the ancients and is mentioned by Pliny as a vermifuge.

Sarsaparilla may be the root of any one of several tropical American species of Smilax, principally Smilax officinalis and S. medica, and of Aralia nudicaulis, the wild Sarsaparilla of this country. These bitter mucilaginous roots are used in medicines and in syrups for flavoring. The Sarsaparilla from Honduras is most highly esteemed, and the Spaniards introduced the roots to Europe from Peru, Brazil and San Domingo as early as the middle of the sixteenth century, when they were supposed to be potent in serious blood diseases.

Perhaps 250 tons of dried Rhubarb-roots, Rheum officinale, are used in this country each year, most of the product coming from Shanghai. Pieces of the rhizomes, which are heavy and close, brittle and of lively color, are the best. As a medicine it combines the opposite qualities of a cathartic and astringent, and is also a tonic and stomachic, and helps digestion. A root which finds sale as a remedy for colic, but which is not considered officinal by the medical profession, is Masterwort, or Angelica (Angelica atropurpurea). The perennial purplish root is common in Canada, and in the United States as far south as the Carolinas, in marshy woodlands and meadows. Another once popular remedy, now but little used, is Mugwort, Artemisia vulgaris, formerly a favorite German remedy for epilepsy.

Pareira brava, the root of Cissampeloo Pareira, a climbing woody vine known as the Velvet Leaf, comes from South America. In Brazil it is used to offset the bites of poisonous serpents. It was introduced into European practice as long ago as 1688.

Years ago the Creeks and Cherokees in Georgia and the neighboring country collected Pink-root in their uncertain intervals of industry, and the plant was abundant in all the states south of the Potomac. The supply in time became smaller and fell short of the demand, but the western and south-western states now provide all that is needed, and casks and bales of it are forwarded from St. Louis by way of New Orleans. The rhizomes and rootlets of Pink-root, Spigelia Marilandica, are a powerful anthelmintic, and in South America and the West Indies S. anthelmia is likewise used. Overdoses are poisonous.

Zedoary is the trade name of the rhizomes of different species of Curcuma, especially of C. zedoaria. The outside of the short wrinkled pieces are gray, the inside being brownish red. It comes from the East Indies and is used

* To be sure, the future generation will be glad to pay $5.00 per thousand feet, board measure, for Pine stumpage, if there is any left fifty-five years hence.

as a stimulant. The fibrous yellow roots of Gold Thread, Coptis trifolia, while not regarded as having medicinal qualities, are, nevertheless, sold in large quantities for their bitter tonic properties. The small evergreen plant is familiar near springs and in marshy places, and will be recalled by many as a local remedy of the country housewife for sore mouth in infants. It is offered in loosely matted masses of the long, thread-like, orange-colored roots, mixed with the leaves and stems.

Quantities of the odorous root of Valeriana officinalis are gathered by the Shakers of New Hampshire, and the industry extends to northern Vermont and New York. But the demand for this one-time fashionable nerve remedy is much too heavy for our home supplies, and many hundredweights come yearly from the gardens of Belgium and the Netherlands—perhaps four-fifths of the entire supply—with smaller quantities from Germany and England. Valerian also comes from Japan, and the root from that country is said to be the richest in oil.

The root of our Blazing Star, Liatris spicata, and of Aletris farinosa, often seen in sandy woodlands, and both commonly known as Colic-root, are bought and sold under the name of Unicorn-root. The woody root of the perennial American plant, Stillingia sylvatica, Queen's Delight, is sometimes used in combination with sarsaparilla and other alteratives. From the Peruvian shrub Krameria triandra the blackish red, long-spreading root known as Rhatany is supplied to commerce. The bark of Sassafras-roots and the pith of the twigs, gathered after frost in autumn, have a recognized place in pharmacy in the United States, and the entire root is exported to England, where, as in this country, large quantities are used in making summer drinks. Parsley-root has an assured place in the wholesale drug trade, as have the roots of the dwarf Nettle, Urtica dioica and U. urens, of America and Europe, and the Musk-plant, the Pond-lily and yellow Dock.

While, perhaps, all the roots regularly quoted in the wholesale druggists' price-lists have now been briefly referred to, these are but a few of the many in regular use in medicine. For example, the rhizomes of Cypripedium pubescens may be bought by the hundredweight, and those of C. spectabile, C. acaule and C. parviflorum all have a market value, some of them furnishing a gentle nerve stimulant less powerful than Valerian. Horse-radish, though not named in the trade price-lists, is used for internal and external remedies. But the list of roots in general use might be extended indefinitely, even without mention of the living roots from which juices are obtained by incision, as the gum resin Asafœtida from the root of Ferula fœtida, and Scammony from Convolvulus Scammonia, besides the roots of our commonly used vegetables and of those of native plants which have only been partially tested.

New York. *M. B C.*

The Cañon Winds in Utah.

THE country adjacent to the mouths of any of the mountain cañons of this state is subject to what is known here as the "cañon wind," a strong breeze which begins about nine or ten o'clock in the evening and continues till about eight o'clock the following morning. These winds occur almost every night from early spring until late autumn, and are felt over a considerable area of country about the cañon's mouth, being strongest, of course, near this point, and gradually decreasing in velocity as they spread over the surrounding country.

They exercise an important influence over the fruit industry of the state, their effect being decidedly beneficial in some ways and equally detrimental in others. Their most marked beneficial effect is in preventing late frosts, and in this way they often save the fruit crop from destruction. A prominent fruit raiser of Provo, whose farm is situated just at the mouth of Provo Cañon, states that he is successful almost every year with apricots, peaches and the early-flowering varieties of grapes, while one of his neighbors, just around a spur of the mountain and not more than a mile or two away, but out of the range of the cañon wind, often lost his entire crop of fruit by the frosts.

The detrimental influence of the winds is confined principally to producing ill-shaped, one-sided fruit-trees, the branches leaning away from the cañon to a marked degree. This effect is much more noticeable in some kinds of trees than others. Apples and Plums seem to be most seriously affected, while Pears and Cherries are much less so. There is also a marked difference in the effect on different varieties of the same fruit, some sorts of Pears showing almost no evil effect whatever, while others, standing near by them, will be seriously distorted. I am of the opinion that this difficulty might be obviated to a considerable extent by judicious pruning from the time the tree is set; at least so far as the general shape of the tree is concerned. The smaller twigs on older trees might be less easily controlled. In cases where a dense and sufficiently high wind-break can be grown on the cañon side of the orchard the evil effect of the winds is much lessened, while the beneficial effects with regard to frosts remain the same.

Shade-trees are affected in the same way as fruit-trees, with the same difference in different species. Contrary to what might be expected, the tall, spire-like Lombardy Poplars show but little ill effect from the winds, but Box Elders, Elms, and even the Carolina Poplars, wherever exposed, are blown entirely out of their usual form and lean away from the cañon, as if to get as far from it as possible. This same difference is noticeable in Pears, the upright-growing sorts being the least affected. Small fruits are comparatively free from the evil effect of the wind, though occasionally it is severe enough to injure even these, if exposed, especially when the shoots are young and tender or at blossoming time.

Utah Agricultural Experiment Station. *F. C. Sears.*

The Care of Weak Limbs of Trees.

IN addition to misdirected efforts or mistakes in the pruning of trees, the results of errors in attempts to save broken or strengthen and support weak, but otherwise green and healthy limbs, are too often seen where trees are cared for. In many cases when a large branch or limb or part of the trunk breaks down to the ground, but still retains some connection with the main trunk, it is best, and will in the end prove most satisfactory, to cut off the broken portion and cover the wound with some one of the well-known substances to prevent the ingress of water, fungi, insects, etc.; or it may even be best to cut down the damaged tree and replace it by a new one. But in very many instances a little trouble and care would result in saving damaged trees for many years.

In supporting cracked, "wind-shaken," weak or overladen limbs, especially of Apple and other fruit trees, which have a tendency to split at the forks or crotches, poles are very often used as props, but this plan is hardly practicable in the case of large shade-trees, and, moreover, it is unsightly.

Limbs of trees liable to split in the forks or crotches are very often held together by placing an iron band or chain around two parts nearly opposite, so that they afford mutual support, and while this may seem to serve its purpose for a time, the increase in circumference and diameter of the limbs soon causes real injury by a process of choking or strangulation which ensues. Through their very small root-hairs and rootlets trees take up from the ground water and some other materials in minute quantities and crude form. This is carried up through the sapwood to the leaves, where it undergoes processes which prepare it for the making of new plant tissue. From the leaves the elaborated sap passes downward between the wood and bark of the stem, branches, branchlets, roots and rootlets, gradually forming new layers of wood and bark and increasing the diameter or circumference of all the parts. When the bark is unduly tightened by any strong band, wire, or even a strong string

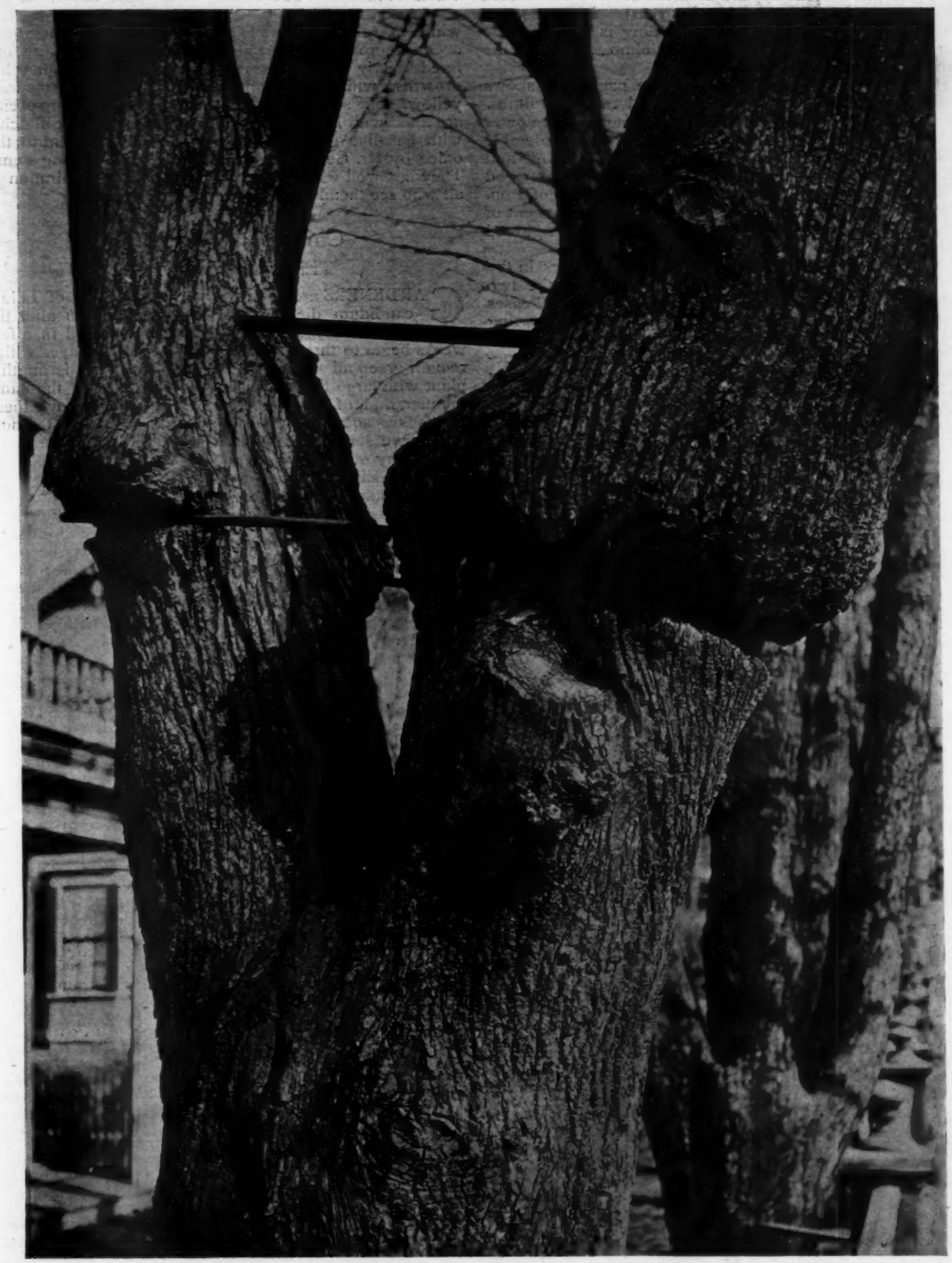

Fig. 35.—The right and the wrong way to support a weak branch.—See page 274.

around it, the descending sap is obstructed and more wood will be formed on the upper side of the band than is formed below, and this increases year after year until the discrepancy may be very great. If the girdling is complete the part of the plant above the girdle is almost certain to die prematurely.

The accompanying illustration (see page 275) shows the effect of placing an iron band around two large limbs. Many years ago the band was tightened against the outer sides of the opposite branches, and now a considerable difference in diameter is seen in the portions above and below the girdle which encircles both limbs. The wood above has begun to grow down over the band of iron. Besides checking the proper growth and development of the plant, the trunk is structurally weakest at the girdled point.

Above the band and constricted portion appears in the illustration a simple iron rod running through the two limbs and treated as an ordinary bolt. In nearly all cases this is the simplest and by far the best system of supporting broken or weak limbs when they are opposite or nearly so. A rod of good iron from an inch to an inch and a half in diameter will bear an enormous strain, and is only necessary in the case of very large and heavy limbs, as of shade-trees. Of course, the strain is less, and a smaller bolt is required the higher up or farther away it is placed above the weak or broken fork or crotch of the limbs.

In a case as shown in the photograph, it is simply necessary to bore a hole straight through both limbs and bolt them together by inserting an iron rod of the proper length, having a large head at one end and a correspondingly large nut at the other, which should be screwed up tight. The rod should fit the hole as nearly as practicable, and a little wax, tar or paint may be applied around the iron where it enters the bark, so as to keep out moisture. After one season of growth any further care of this kind will be unnecessary, as the new tissue formed will have completely closed any opening around the iron. The hole bored does very little injury to the limb and soon heals permanently.

When the trees or branches are not too large or heavy, or when the rods are well up from the weak forks or crotches of the limbs, iron half an inch in diameter is amply strong enough. Where the rods are long and connect widely spread branches it is well to have them made in three separate pieces; two short bolts passing through the branches and a third connecting them, the inner ends of the bolts and the ends of the connecting third piece being provided with eyes or hooks. Made in this way there is no danger of the iron breaking by twisting caused by swaying of the upper branches, and such long rods are more easily fitted in place when in sections.

It is often worth while to preserve rare or valuable fruit or other trees which have split apart and fallen to the ground, but are still connected with the stump and are alive. By raising the limbs and connecting those opposite by several rods at various angles such trees may be preserved for many years.

Limbs of small trees and large shrubs which have become split apart may often be securely held together by simply screwing strong hooks into the opposing branches and connecting by strong wire.

The tree represented in the photograph is an American Linden, or Basswood, growing in a small front yard in the city of Boston.

Arnold Arboretum. *J. G. Jack.*

Plant Notes.

Calochortus Plummeræ.—This plant, otherwise known as Calochortus Weedii purpurascens, is, as Mr. Gerard has recently noted in these columns, a late-flowering species of the Butterfly Tulips. Its distinctness and quaint beauty deserve a special mention among July flowers. It grows vigorously although it has sparse foliage. Its large flowers are bowl-shaped, not reflexing on the margins, as is common with most of the species. The coloring varies somewhat, but usually the upper halves of the petals are light lilac in color, and the lower parts greenish white. At the base also is a lilac marking like the arm of a Greek cross. The petals are of a satiny texture and lined nearly to the tips with profuse but short hair-like growths, which are sometimes purple and sometimes yellow. The sepals, which are wider than in most species, are lined with lilac and in some forms have dark blotches with hair-like growths. Some of the flowers sent to this office by Mr. Gerard are gracefully carried on long stems. They last well when cut and call forth the admiration of all who see them.

Cultural Department.

Transplanting Pæonies.

GARDENERS are well aware that the tops of Lilium candidum die down to the ground soon after the plants flower, when the bulbs take their rest, and in a few weeks begin to throw out roots and radical leaves which remain green all winter. The Oriental Poppy is another plant with large fleshy roots which behaves in the same manner, and, of course, the proper time to remove these plants is as soon as the tops have died and before the new roots have started for autumn growth. There are, however, many other herbaceous plants with fleshy roots the tops of which do not die down after flowering, while they send out a set of new roots in early autumn, which are probably useful in aiding to store up material in the root for the production of early flowers and seeds the ensuing year. Among plants of this class Pæonies may be mentioned, which are most successfully moved in this country in August. Owing to climate and exposure the most successful practice in English gardens differs much from that which prevails in this country, but the following advice from a late number of *The London Garden* is well worth considering in America:

An all-important item in the matter of Pæony culture is planting at the right time, and for this work no better time exists than the early autumn or late summer, by which I mean the end of August or during September. At this season of the year the plants will still be furnished with leaf and stem, and, preserving these intact, it is possible to lift and transplant a very large-sized clump of one of these Pæonies with the assurance that a good proportion of flowers will be forthcoming the year after. There are many who believe that planting or transplanting may be done at any time while the growth remains comparatively dormant, but let any such transplant a fair-sized specimen in September with all its foliage intact and another in January with no foliage and note the results. The one planted at the latter time will have many of its flowers blind in the ensuing year as a direct result of late planting. Nor is this all, since the same cause which has contributed to the blind buds will in all probability have produced a debilitated condition generally of the plant, though more particularly of its roots, that will not readily be overcome. A weakened root-action in a Pæony means a relatively weak growth, and from this an obviously weak bud at its base as the result. It may be thought that I have restricted the planting season to very narrow limits, yet I regard a certain season quite as important for these as I would for certain classes of bulbs to be planted before root-action commenced.

The whole subject of planting Pæonies turns on a question of roots, or rather the time and the manner these are produced, and when these facts are more generally realized the easier will it be to insure the planting of these within reasonable as well as seasonable limits. In Pæonies two sets of roots are produced in the year, the chief being in early autumn, and it is, therefore, to secure these intact that the planting should be done before they push forth. Planting done at a much later date either sacrifices these roots entirely or so mutilates them that they are of little value, and then the cry goes forth that Pæonies are difficult to establish. In point of fact, few things are more readily established when the work is done at the right time, but this is rarely the case. Lifted and planted when growth has well begun, and the plant has to exist all summer long on its own resources, it is little wonder the plants decline for a year or two or are slow to make a start at all. At Kew,

about two years since, some very large clumps were lifted, rearranged and replanted in full leaf in early autumn. Well planted, thoroughly soaked with water at the root, it was evident what the result would be the year after. Many of these plants, in fact, carried large, handsome blossoms, while to-day they are perfect examples and loaded with vigorous growths and flower-buds.

Next in importance to planting is the soil, which cannot be either too deep or too rich for these gross-feeding and vigorous perennials. Select a spot away from the roots of large trees and dig the soil as deeply as circumstances will permit, two feet, or three feet if possible. Work in quantities of well-rotted manure and bone-meal, old mortar rubbish and the like, also leaf-soil where this is plentiful and the natural soil very stiff or water-holding. So far as the soil is concerned, Pæonies will thrive in almost any that is deep and well enriched, but there must be no stint of manure, especially where hot sand or gravelly soils abound. In these latter it will be found a good plan to slightly sink the surface of the bed below the ordinary level, so that manure-water may be given freely at any time when needed.

Notes from Baden-Baden.

ALTHOUGH I regard Mr. W. Watson as a cultivator of highest rank, yet my experience with Richardias constrains me to differ widely from his views. I treat these plants much like Kniphofias or Gladioli; late in autumn, when the foliage withers, the corms are taken up, left to dry in the greenhouse, and afterward they are stored away in dry soil in a cool room until spring, when at the end of March they can again be planted in an outside border. A still better, but less convenient plan is to leave the corms outside, to cover them with some five inches of dry leaves and put on a sash or boards to keep off the wet. My plants are sturdy, clean, superabounding in health and very free-flowering; they are now in flower and continue to bloom until the end of August. Richardia Nelsoni has slightly mottled, large, heart-shaped leaves and flowers of a very attractive creamy white, with a shade of sulphur and a large violet-black blotch. It is a striking plant and sure to find admirers. R. Adlami is another still more remarkable new species. It differs from the former by its glaucous green and more sagittate leaves, which have no spots, and by its somewhat larger flowers in which the violet-black blotch is larger, extending often to two-thirds of the spadix.

A lovely plant is Dierama (Sparaxis) pulcherrima alba, with white bell-shaped flowers hanging and swinging on minute threads. This plant must either be kept in a pot or must have the protection of a frame. The Caucasian alpine, Campanula mirabilis, is now covered with hundreds of its beautiful bright blue flowers, forming a low pyramid, which attracts the notice of every one who passes it.

Baden-Baden. *Max Leichtlin.*

Garden Notes.

IN Mr. Gerard's interesting notes on June Irises I do not find I. Tingitana mentioned, to my mind one of the most beautiful Irises of the bulbous section. It grows about two feet high and bears a flower as large as that of the English Iris, so called, but shaped more like that of the Spanish varieties. Its colors are blue of two shades, white and yellow. I cannot speak as to its hardiness since I have always protected it with hay during winter.

I have spoken of Ixias before. Mine have just passed out of flower and have been so exceedingly beautiful that I feel it almost a duty to say again if they can have a covering about three inches thick until the first of April they will go through the winter perfectly well and be vastly more satisfactory than if grown under glass. There are only two or three points to be observed: Plant three inches deep, waiting until the end of November, so that there shall be no danger of premature growth; cover with three inches of Pine or other leaves or hay, removing the same about the first of April, so that the shoots shall come strong, and take up the bulbs about the end of July. I have now in flower two varieties of what Dammann & Co. call their Victorialis strain of Gladiolus. They are almost the same as G. Byzantinas, but not quite as good. They are said to have the blood of some of the African species, but I see no evidence of it.

Asphodelus ramosus seems to be desirable when grown to a good size. A plant of it this year reached a height of nearly six feet, branching freely, and was covered with its fine white blossoms almost two inches across, with a thin red line down the centre of each division. It really seems to me as fine as Eremurus robustus and much more easily managed.

The best things under glass at present are Gloriosas and Gloxinias. The shining, tendril-tipped leaves and the curious spidery flowers of the former are specially attractive. I once succeeded well in growing Gloriosas out-of-doors. They climbed on pea-brush to the height of four feet and made quite an unusual effect. I never could get them to do it again and have not tried of late. The nearly allied Littonia modesta is much hardier, and I no longer give it room in the house, but treat it exactly as I do Gladioli. Planted in the open ground it has no tendency to climb. As for Gloxinias, I cannot think it well to dispense with naming varieties. It is true that the average seedlings of the present day are much superior to those of twenty years ago, but it is also true that many varieties then existing were superior in substance and coloring to those which are shown now. As soon as we cease to preserve the best kinds (and naming them helps in this matter) we shall cease to improve the quality of the flowers.

I have used a label of my own invention for several years which I can recommend as satisfactory in general practice. No one kind is best for all purposes, but where permanence is desired I write the name with India ink or a soft lead pencil on a bit of paper, inclose in a small bottle and cork it. The bottle may be fastened to a tree with a copper wire, or when used for Dahlias or Gladioli it can be fastened to a stake of wood or wire. I have used these bottle labels for four years, and not one has been broken, and some have been used for Ixias and have lain out on the ground, winter and summer, since 1893 without breakage or loss. I use a kind called half-ounce Boston round. A gross cost me $1.50, and corks for them ten cents more. I think they would give satisfaction for many purposes.

Canton, Mass. *W. E. Endicott.*

Opuntias and Sedums.—The value of hardy Opuntias and Sedums as garden plants ought to be more generally appreciated. In the heat of summer they bloom finely, and that, too, in situations so hot and dry that few other plants can live there, much less thrive and flower freely. Instead of wilting in the sun, the flowers seem to rejoice in the heat, so that it is a pleasure to look at them. Just now, July 2d, the following are in full display here: O. vulgaris, O. Rafinesqui and O. oplocarpa. These are quite distinct sorts. The first has thick, fleshy joints, with comparatively small, deep yellow flowers; O. Rafinesqui has larger and flatter joints and rather larger flowers; O. oplocarpa has large, flat, very spiny joints, and its yellow flowers have a bright orange base. Large masses of these plants make a beautiful display. Sedum album and S. speciosum are also flowering now. Both are creeping or low-growing species. S. speciosum has rosy pink flowers, a rather uncommon color in the genus, and it is one of the best of all, both for its color and its profusion of flowers.

Coronilla varia.—Not many perennial plants flower for so long a time as this pretty leguminous plant. It is of creeping habit, or rather half-climbing, and does its best to clamber over brush when an opportunity is given it. The flowers begin to appear here in mid-June and they continue for a period of two months, and even later on a few flowers are displayed. The flowers, sometimes nearly pink and at other times pale purple, are in little heads of about twenty-five each. Like other plants of this genus, the foliage is usually pea-green. It is a native of southern Europe.

Centaurea macrocephala.—This is also a valuable summer-blooming perennial. The large heads of composite flowers on the various Centaureas are familiar to every one. This particular species bears large, clear yellow flower-heads on stems nearly three feet in height. To make an effective display large masses of it should be planted together.

Germantown, Pa. *Joseph Meehan.*

Correspondence.

Notes from West Virginia.

To the Editor of GARDEN AND FOREST:

Sir,—This is the time of the year when Hollyhocks, Yuccas and tall Lilies are the most conspicuous ornaments of the garden. A few Hollyhocks were planted five or six years ago on ground enriched by an old woodpile, and since then they have been left to themselves. Here they have increased and multiplied in the rich soil, sending up many seedlings every year and grouping themselves in beautiful colonies. All shades of Hollyhock bloom are here, from white through the palest flesh tints to deepest maroon, varied by buff and lemon-tinted

flowers. All are in perfect health, and having crowded out the weeds that originally fought with them for mastery they are now in full possession of the soil. Hollyhocks are ideal plants for waste places such as this.

Here at Rose Brake we like to use a good deal of discrimination in the arrangement of flowers so as to make them blend harmoniously, and we are fond of scattering herbaceous and even some annual plants among our shrubberies. Thus, a group of spring-blooming shrubs in a prominent position is now carpeted with yellow and orange Nasturtiums, while tall orange-colored Milkweed is blooming here and there among them. These bright flowers, shining amid the healthy green of the shrubbery, form a charming picture which would be quite spoiled, it seems to us, by the admixture of any other color.

In another place the deep red Monarda didyma grows luxuriantly among some Oak-leaved Hydrangeas, now in full flower, and here the large creamy trusses of Hydrangea bloom contrast well with the rich carmine of the Monarda flowers. These simple effects are much more satisfying to the eye than the bewildering jumble of discordant colors seen in so many gardens, which want of space and a desire for great variety combine to spoil.

Spigelia Marylandica is a pretty companion for Monarda didyma, and is now in full bloom. It should be planted in partial shade as it does not thrive in full sun, and it needs a deep, rich, moist soil. The latter condition we have to supply by frequent watering and mulching, as none of the soil on our dry hillside can be called moist. The Spigelia belongs to the small family of Loganiaceæ, of which Gelsemium sempervirens, the so-called Yellow Jessamine of the south, is, perhaps, the most conspicuous member. The Spigelia is about a foot in height and bears numerous beautiful tubular blossoms of bright red lined with yellow.

Foxgloves have been very fine this year, and are now passing. These are best away from scarlet flowers, as their tall spikes of purplish pink blossoms do not harmonize with red. But the tall pure white Foxgloves are effective almost anywhere, and especially when seen in bold groups with a background of dark foliage they have a stately effect and remain a long time in flower. All Foxgloves are easily raised from seed and bloom the second year after planting. We plant ours in the open in April, where they take care of themselves; all the attention they receive is an occasional stirring of the soil around their roots and thinning where they are too thickly planted.

Rose Brake, W. Va. *Danske Dandridge.*

Dodder in Clover.

To the Editor of Garden and Forest:

Sir,—Two letters within the last twenty-four hours have been received at this station, with samples accompanying each, in regard to Dodder upon Clover. There is a mingled feeling of wonder and fear expressed in both of the communications, and as Clover Dodder is not a widespread and common enemy in this country a note on the subject may be useful. Last year I sent a brief article to Garden and Forest concerning Dodder upon the Onion and Eggplant on some large truck farms. And now one correspondent writes that while cutting his clover "the machine would suddenly enter a thread-like mass which clogged it completely. After cutting, the mass soon wilted and formed a sort of blanket which could be rolled up. . . . There were about fifteen of these beds, averaging six feet in diameter to the acre. Since cutting (some ten days ago) the Clover has made a good start over the entire field, except where this growth occurred. In these beds everything is as dead as if burned over with fire. Around the edges of these bare patches a new growth of this fibre has started vigorously, and if not checked may overrun the whole field." The second complaint speaks of the growth as found in spots all over the field, "forming a dense mat, almost obscuring the Clover-stems when cut off. . . . In some places the Clover is killed."

These extracts show how active the Dodder may become when once it gains a foothold in the Clover-field. Of course, both writers ask how the growth got into the field and what is the best method of eradicating it. In the one case the land bearing the Dodder has "been under cultivation for fifty years." The other was pasture for twenty years, and then plowed for Corn, followed by Wheat and Clover.

The seed of the Clover Dodder, Cuscuta epithymum, is nearly the same shape as that of the clover, but not more than one-fourth as broad or long. It could be easily separated from the clover by an ordinary fanning-mill with properly adjusted sieves. It is not unlikely that it came in with manure. Under the circumstances it is impossible to be certain as to the way the entrance was made.

The fact that it is a seed-bearing parasitic pest should put all who have the Dodder in their fields upon their guard against permitting the seeds to get into the manure. All patches of the plant should be raked up and burned along with any clover to which it may be attached. It is worse than a weed because it grows upon the plant and demands specially thorough treatment.

Experiment Station, New Brunswick, N. J. *Byron D. Halsted.*

Pear Blight.

To the Editor of Garden and Forest:

Sir,—I send you some twigs of a Pear-tree on which the leaves and young fruit seem to be affected with some disease. Will you please tell me specifically what it is and how it should be treated?

Jenkintown, Pa. *G. F.*

[This is the well-known fire-blight which is now supposed to be due to a bacterium which enters the plant through the tender parts of the tissue, like the flower-buds or young leaf-buds as they unfold, and spreads down through the branches. When it appears on the main branches it is often called "body blight," and its presence is marked by brown and lifeless patches which become sunken. Wherever the blight appears the limbs should be cut off at once below the point where the infection has reached, and as a precaution against the spread of the disease the prunings should be burned.—Ed.]

Two Insect Pests.

To the Editor of Garden and Forest:

Sir,—Upon a fine young Butternut, planted two years ago in a natural grove of Oak and Hickory, I lately discovered signs of the destructive work of some insect. The leaves were yellowing and worm-eaten and many of them falling. Closer examination showed that the mischief was due to worms about an eighth of an inch in length, their backs tufted with a snowy white filamentous growth resembling cotton or wool. Professor John B. Smith, the Entomologist of the New Jersey Agricultural Experiment Station, to whom samples were submitted for identification, writes that the insects are ordinarily rather rare, and that this is the first time he has met with them in this state. The species is known as the Butternut woolly worm. It is the larva of one of the sawflies, and will succumb readily to an arsenical spray. Even a weak mixture like one pound of Paris green in two hundred gallons of water will be sufficient to kill off the insects if they are really abundant enough to be troublesome. The tree in question is the only Butternut known to exist in the neighborhood, and it would be interesting to learn how its natural enemy has discovered it so quickly.

Phytomiza Aquilegiæ, after resting from its labors last season, has now begun active work upon my large collection of Columbine-plants. There was not a sign of it until about ten days ago, but now the leaves are badly mined, showing in curious tracery the meanderings of the grub. It is an aggravation that no insecticides avail against this insidious footless pest. The Columbines blossomed in all their glory, however, before the attack began.

Inwood, New Brunswick, N. J. *S. de L. Van Rensselaer Strong.*

Gardens for Public Schools.

To the Editor of Garden and Forest:

Sir,—In your issues for May 5th and April 21st are articles on school gardens, based on some work done at the Cornell Experiment Station, and they give the impression that this is the first experience of the kind in America. You say, "a correspondent writes to inquire why the obvious plan of having a garden attached to every school has not been suggested." Your correspondent evidently is not aware that the Massachusetts Horticultural Society has been suggesting this for six years past and has sent out thousands of reports on gardens connected with schools near Boston. I send you a prize list as an evidence of the work done by the Massachusetts Horticultural Society since 1891.

Roxbury, Mass. *Henry L. Clapp.*

[The list contains a schedule of prizes for school herbariums, and the society also offers one prize of $15.00, one

of $12.00 and one of $10.00 for gardens stocked with native wild flowers, such as Ferns, Grasses, Asters, Golden-rod, native shrubs, economic plants, such as grains, vegetable roots, leguminous and cucurbitaceous plants. What are known as ornamental plants commonly cultivated in gardens are not admitted into the school gardens for competition. In determining the prizes reliance is placed mainly on the principals in charge. The names of the plants and the uses actually made of them must be accurately described.—ED.]

Recent Publications.

Mountain Climbing. Charles Scribner's Sons. New York. 1897.

In this torrid weather a table of contents, with chapters on Mount Washington in Winter, Mount St. Elias and Its Glaciers, A Thousand Miles Through the Alps, and The Ascent of Mount Ararat, ought to have some refrigerating influence. The illustrations show fields of everlasting snow, with cliffs and peaks of ice, frost feathers everywhere, and fur-clad climbers who only seem to need the exhilarating influence of a blizzard to make them entirely happy. These illustrations, of which there are something like a hundred, are, as a rule, unusually effective, although they differ very widely in character, and range from those which show the delicacy, refinement and finish of Mr. Jaccaci's touch to the mechanical but thoroughly good reproductions of photographs in which the engraver's tool has turned the half-tone into a genuine work of art. There are seven articles in all, written by Edward L. Wilson, Edwin Lord Weeks, Mark Brickell Kerr, William Williams, A. F. Jaccaci, H. F. B. Lynch and Sir W. Martin Conway, and they have been gathered together into this volume from the pages of *Scribner's Magazine*, where they first appeared at different times. The essential unity of the book is found in the spirit of the mountain climber which pervades it, and this is one the world over, from Ararat to St. Elias. There is the same joy of battle with the forces of nature, the same exhilaration at conquering dangers which are by no means imaginary, the same cheerfulness and good humor which is essential to success, for, however querulous or pessimistic a mountain climber may be elsewhere, when he is once above the clouds with his life in his hands and toes he is the most genial of comrades, the most devoted and self-denying of friends. All the chapters are well written, and one almost gets a surfeit of panoramas of desolation, vast silences and solitudes of ice, the yawning blackness of bottomless chasms, and winds and storms which enjoy themselves in a wilder way than they do anywhere within a mile of the sea-level. Other travelers occasionally take pains to tell something of the life of the regions they explore; they make friends with trees, shrubs and humbler plants, and with the animals, birds and insects which they encounter; but the mountain climber scales his peak and sees little else but the mountain and the broad features of the earth which are spread out beneath his feet. This lack of scientific investigation, however, can be forgiven, and, indeed, drudgery of this kind seems too prosaic for these pilgrims possessed with an absorbing passion. The stimulus of the mountain climber is really a moral one, and anything so earth-born and unimaginative as a longing for knowledge would seem to be altogether too tame to make an effective appeal to his adventurous spirit. Physical trials like those which face the confirmed mountain climber can only be overcome under such excitement as the soldier feels when going into battle. Altogether, it is a pleasant book to pick up, and one can hardly read a page without coming on some such passage as this in Sir W. Martin Conway's chapter entitled "A Thousand Miles Through the Alps":

> The finest scenery in this part of our journey at the west end of the famous Bernese Oberland was that of the glacier of the great Dead Plain. We did not see it until we were on its edge and the white expanse spread before us. It fills an elliptical hollow some two miles long by a mile wide, and once on its smooth large surface the external world is shut out by a ring of low mountain wall. Not a trace of human activity can be seen in any direction. The largeness, simplicity and seclusion of this strange snow-field make it unique. We traversed its longest diameter, and the hard surface was beautifully rippled and perfectly clean.

Current Literature.

An interesting monograph on the Peach industry in Pennsylvania has been prepared by Professor Butz, and published as Bulletin No. 37 of the Agricultural Experiment Station of that state. The industry is only twenty-five years old, and yet the area in Peach orchards in Pennsylvania is estimated at 11,000 acres, or something like 2,000,000 trees all told. Most of these are found in three or four counties in one or another of what are known as the Peach belts of the state. The largest of these sections is the Juniata Peach belt, located principally in Juniata County, but extending into Mifflin, Perry and Snyder counties, comprising together some 3,500 acres. The next largest district is the South Mountain belt, lying within Franklin County, but extending across Maryland to the Potomac River. In both these belts the orchards are on hills, the latter embracing the western slope of South Mountain, where there are now planted some 400,000 trees, with the prospect that the entire slope will soon be devoted to this industry. There are single orchards that contain from 6,000 to 8,000 trees, and one orchard contains at least 10,000.

The one hindrance to Peach growing in Pennsylvania which cannot be entirely overcome by human foresight and effort is the winter-killing of fruit-buds. It is not the degree of temperature only which causes this destruction, but several other obscure conditions, besides unripened tissues and drought. A more or less complete failure of fruit by winter-killing seems to happen at least once in four years. While there are many insects which are enemies to the Peach, the only one to be dreaded seriously is the borer, and this can be controlled by careful examination in spring and fall, and when an attack is discovered the offender is dug out with a knife. This is tedious work, and it requires to be done by a trusty man, but the remedy is sure. The mysterious disease known as the yellows is working an increasing amount of damage. It is contagious, and no one knows a remedy for it. Whenever a tree shows symptoms of the malady, even if it is young and strong, the trunk is blazed and the next winter it is cut down and burned. If these things are attended to and the ground is stirred every year from May to July inclusive, a paying crop can be counted on. Fertilizing with potash salts and phosphates, with Crimson Clover or some other leguminous crop to gather nitrogen, has proved remunerative, and, of course, the practice of thinning the fruit has proved beneficial here as elsewhere, not only to the immediate crop when quality and profit are considered, but also in preserving the health and vigor of the trees. The practice of using smaller packages is growing, and the so-called Michigan basket, with a handle, a raised lid and a capacity of twenty pounds, is favorably spoken of. There are more small families than large ones, and purchasers more frequently want a peck or a half-peck than a bushel, and they will therefore more readily buy a small package which they can conveniently carry away than a larger one.

Among the most profitable varieties which ripen in the South Mountain belt from September 25th to October 17th are the White Heath Cling, Salway, White Heath Freestone, Bilyeu's October and Levy's Late. Varieties which prove good on both high and low land are Crawford's Early, Crawford's Late, Mountain Rose, Reeve's Favorite, Moore's Favorite, Old Mixon Free, Stump, Chair's Choice, McAllister and Fox Seedling. Susquehanna is a variety which originated with a Mr. Griffith in this state; it is a large yellow-fleshed, red-cheeked peach of superb quality and ripens late in August. The tree is not a prolific bearer, however, and therefore it is not often planted for market. In

commercial orchards planters remember that the market prefers yellow-fleshed peaches to white-fleshed ones, even though the latter are of better quality. Peaches like Mountain Rose and Bilyeu's October are white-fleshed, it is true, and they are planted, but this is because of their productiveness. A cling-stone peach should be avoided as one avoids an enemy. The only clingstone planted largely in Pennsylvania orchards is Alexander, and this is tolerated because it is the earliest to ripen.

Notes.

Tender asparagus is scarce and sells at twenty-five cents a bunch. Sweet corn, from New Jersey, is as yet immature, and the best seen last week came from North Carolina. Tomatoes seem uncommonly poor, and, although they now come from near-by fields as well as from the south, they are too costly for general use and are sold by the pound and quart. Many are sun-burned and blistered. The first Lima beans, from Florida, were offered last Saturday.

The annual report of the City Parks Association of Philadelphia has just come to hand, and it seems to be a record of considerable success in the useful work of securing open spaces, planting trees, providing playgrounds and saving, so far as can be, the natural beauties of the land over which the city is extending. Since the establishment of this association something like thirty pieces of ground have been secured, ranging from thirty acres in size, downwards, and it is hopeful that the disused burial grounds of the city will soon be thrown open for public use, and that funds for the proper development and management of the recently acquired grounds will be obtained.

According to the *Washington Star* more than 20,000,000 packages of seeds have been distributed by the Department of Agriculture this season, at an expense of $130,000, each member of Congress having 40,000 packages to dispose of. There were more than a million packages of flower seeds, nearly half a million packages of field seeds, and, of course, vegetable seeds in great variety. Thirty-two kinds of beans, twenty-three kinds of cabbages, thirty of lettuce, and nineteen of muskmelons indicate the wide range covered by the list. The entire amount of seed distributed would have planted more than three hundred and fifty square miles, the largest distribution ever attempted by the Department. The *Star* might have added that this is one of the most disgraceful swindles ever perpetrated by a civilized government.

A correspondent of *The Gardeners' Chronicle* praises several named hybrid Hemerocallis which have been produced by a Mr. Yeld, of Clifton, Yorkshire, from crosses between different species of this genus. Some of these are described as valuable plants, and one of them, a hybrid between H. flava and H. Sieboldii, is said to be remarkably showy and distinct. It grows vigorously, has sturdy flower-stems thirty inches high, each bearing eight or ten orange colored flowers four inches in diameter and three inches long. The buds are a brownish purple and highly polished, and this color is retained on the outer segments after the flower has fully expanded. The prolific character of the plant may be estimated from the fact that in a space about two feet square forty flower-stems were carrying something like 360 flowers. The different species of Hemerocallis are so beautiful that they offer a most promising field for the hybridizer.

Mr. W. Botting Hemsley states in *Knowledge* that the characteristic form of the tall-growing Gum-trees of Australia is a massive trunk, branchless to a great height, and a comparatively small crown, with the ultimate branches slender and drooping. In some species the bark is smooth and polished like that of the Beech; in others it flakes off, as in the Planetree. The Blue Gum, Eucalyptus globulus, although it is less than half a century since its value began to be realized, probably has a more extensive literature than any other tree. E. amygdalina, in its fullest development, is probably the tallest of trees. A prostrate tree of this species was found to be 420 feet long and 295 feet up to the first branch, where the trunk was four feet in diameter, and at 360 feet it was still a yard through. The Karri, E. diversicolor, and the Jarrah, now used extensively for street paving in London, are both trees of enormous magnitude. There are many records of trunks between twenty and thirty feet in circumference at five feet from the ground, and Mueller mentions a buttressed Jarrah-tree which girthed sixty feet at six feet from the ground. It may be added that a cubic foot of green Jarrah wood weighs seventy-five pounds, and when dry about sixty pounds.

The recognized method of destroying weevils and other seed-infesting insects which cause serious loss to seed and grains both for sowing and for food purposes, is to treat them with the fumes of carbon bisulphide at the rate of one pound to a hundred bushels. This chemical is a colorless liquid, but when exposed to the air the sulphur and carbon separate, each uniting with the oxygen, forming carbon oxide and sulphur dioxide, the latter of which is a very poisonous gas with a disagreeable odor. To ascertain whether seeds treated with this chemical lose their germinating capacity an experiment was made by the Division of Botany in the Department of Agriculture, in which seeds were exposed to a saturated atmosphere of carbon bisulphide for forty-eight hours. They were then placed in a germinating chamber in which check lots of untreated seed were also tested. The result was that the germinating percentages of almost all the seeds treated and untreated were the same, although in barley, rye, wheat, corn, crimson clover, millet and rice this extreme treatment caused some injury. The varieties which were damaged by an exposure of forty-eight hours were then put to another test of twenty-four hours' duration, and the result seems to be that in general the seeds of cotton, peas, beans, buckwheat, oats, the cabbage family and cow peas will endure severe treatment with the fumes of carbon bisulphide without losing their germinating quality to any appreciable extent, while on the other hand seeds of corn, wheat, rye and crops belonging to the grass family, except Kaffir corn and oats, should be treated with caution, since a deterioration in vitality is likely to result from excessive exposure to the gas.

The great quantities of beautiful California cherries which have made so bright a showing on the fruit-stands for a month past are steadily decreasing, and only small consignments of Oregon, Royal Anne, Black Republican, Black Tartarian and Black Bigarreau came last week in fifty-two car-loads of fruits from the Pacific coast. Bartlett pears are now of good size, as are Clapp's Favorite, and good California peaches are fairly plentiful and include such varieties as the favorite early Alexander, the juicy white-fleshed Hale's Early, Governor Garland, the choicest of all the early peaches, and having delicious flavor and fragrance; Briggs' Red May, a standard early sort since 1870, and the highly flavored yellow St. John. There were Royal, Silverskin, Moorpark and Blenheim apricots, and some showy large Red Astrachan apples. Plums and prunes were never so plentiful here and so varied in color and form, and this fruit comprises the bulk of the great quantity now arriving. Among the popular and highest-priced varieties now in season here are the medium-sized, dark purple Tragedy prune, with rich, sweet yellowish green flesh; the French Peach plum, large, roundish, with shallow suture, and varying in color from salmon to brownish red; the reddish flattened Simoni plum, with deep cavities at base and apex, and apricot-yellow flesh of aromatic flavor; Burbank, a very large, nearly globular plum, rich cherry-red in color, slightly mottled with yellow and freely dotted with the same color, having a distinct flavor. Ogon, Abundance, Parsons' Early, Clyman, Royal Hative, St. Catherine, Wickson, Purple Duane, Washington, Pedro, Hungarian, Yosabi, Satsuma and Botan are all seen and make a remarkable display of color and form. Fresh figs are also more abundant than in any former year, and sell as low as 60 cents a dozen. The leading late varieties of peaches are now coming from Georgia, but these are hardly up to the average in quality, owing to curculio sting, and sometimes to decay. Exceptionally large Georgia peaches known as Belle sell for $1.00 a basket holding twenty of the fruits. Strawberries, raspberries, currants and other small fruits proved very perishable during the hot days of the past week, and while good fruit cost the householder ordinary prices, large quantities of soft berries were bought up by makers of jams and syrups at unusually low rates. Lemons advanced $1.00 a box as a result of the hot weather, and the best Palermos brought $5.12½ wholesale at auction. Nearly 200,000 boxes of this fruit are on the way from the Mediterranean, but only two cargoes are expected here this week, so that if the heat continues even higher prices are certain. The shortened supply of bananas from Cuban ports has been made good by extra shipments from Central America, and during June 561,000 bunches were sold in this city to retail dealers, an increase of 31,000 bunches over the amount handled in the same month a year ago. A few of the delicate little Lady-finger bananas were among these importations and are occasionally seen in the fancy-fruit stores.